

IN THE CLAIMS

Please amend the Claims as follows:

1. (Currently Amended) A method of performing a switchover of data flows in a multiservice packet based switch from a first data flow path to a second redundant data flow path without loss of data, said multiservice switch including
5 redundant switching cores, said method comprising the steps of:
 - providing a plurality of ingress and egress communications traffic flow controllers, each of said flow controllers directing one or more threads of said communications traffic over one or another of said redundant switching cores;
 - monitoring communications flow paths traversing said ingress flow controller,
10 one of said redundant switching cores and said egress flow controller;
 - in response to a need for switching at least a portion of said data flows to said redundant data flow path, causing an interruption of said at least a portion of said data flow by an ingress flow controller and signaling the occurrence of said interruption to an egress flow controller in a traffic thread from said ingress flow controller, wherein
15 said interruption signaling further identifies a switchover of ~~indicating to said egress flow controller an intention to switch~~ at least a portion of said data flows to a path including said another switching core;
 - ~~waiting a given time to cease receipt of packets from said one switching core an~~
interval after said interruption and thereafter causing said least a portion of said data
20 flows to be restarted;

providing a signal from said ingress flow controller to said egress flow controller indicative of said data flow restart and directing a switchover by said egress flow controller to ~~receiving an indication to start accepting said data flow from a path traversing~~ said another switching core path; and

25 accepting said data flows from said path traversing said another switching core.

2. (Original) The method of Claim 1, wherein one or more virtual output queues (VOQ) exist for a particular ingress flow controller and a particular egress flow controller, switching from said first data flow to said second redundant data flow being accomplished on a per VOQ basis.

3. (Currently Amended) The method of Claim 2, wherein said step of monitoring data flows is accomplished using link test cells generated from a link test cell generator in said ingress flow controller to a link test cell receiver in said egress flow controller.

4. (Currently Amended) The method of Claim 3, wherein ~~an indication to switch said data flow path~~ said interruption signaling is given by an end-of-flow (EOF) test cell.

5. (Currently Amended) The method of Claim [4] 3, wherein said ~~indication to start accepting packets from said another core~~ data flow restart signaling is given by a start-of-flow (SOF) test cell

6. (Currently Amended) The method of Claim 1, wherein the step of accepting includes the step of altering a filter table in said egress flow controller upon

detection of said data flow restart signaling indication ~~to start accepting said data flow from said another switching core.~~

7. (Original) The method of Claim 1, wherein a destination address of a special test cell is directed to a specific flow controller with regard to a unicast switchover.

8. (Original) The method of Claim 1, wherein special test cells arrive at all leaves of a multicast data transmission, the test cells including a field used to select a particular flow controller address for switchover of said data flow.

9. (Original) The method of Claim 5, wherein a SOF test cell for a flow controller corresponding to an offline data flow is not scheduled until an EOF test cell has been dequeued from the flow controller corresponding to the online data flow.

10. (Original) The method of Claim 2, wherein VOQ backpressure is asserted to an ingress flow controller once a valid switchover communication is received regarding a corresponding VOQ, thereby enabling FIFOs in said ingress flow controllers to drain.

11. (Original) The method of Claim 5, wherein a flow controller for an offline data flow uses an offset counter to detect that a SOF cell is at the head of a VOQ.

12. (Original) The method of Claim 1, wherein said flow controllers include a function for aggregation of various data flows.

13. (Currently Amended) The method of Claim ~~13~~ 1, wherein said flow controllers further include an arbiter function for selection of said data flows.

14. (Currently Amended) A multiservice packet based switch apparatus capable of performing a switchover of data flows from a first data flow to a second redundant data flow without data loss, said apparatus comprising:

at least two redundant switching cores; and

5 a plurality of ingress and egress communications traffic flow controllers coupled to said switching cores, each of said flow controllers directing one or more threads of said communications traffic over one or another of said redundant switching cores;

respective ones of said flow controllers monitoring corresponding communications flow paths traversing said ingress flow controller, one of said
10 redundant switching cores and said egress flow controller;

wherein, in response to a need for switching at least a portion of said data flows to said redundant data flow path, an ingress flow controller causes an interruption of said at least a portion of said data flow and signals the occurrence of said interruption to an egress flow controller in a traffic thread from said ingress flow controller, and
15 further wherein said interruption signaling identifies a switchover of a test cell generator included in said flow controllers operable to receive a request for a data flow switchover and in response thereto to indicate to said egress flow controller an intention to switch at least a portion of said data flows to a path including said another switching core;

20 said ~~egress~~ ingress flow controller waiting an interval after said interruption and
thereafter causing said least a portion of said data flows to be restarted ~~a given time to~~
~~cease receipt of packets from said one switching core, and providing a signal to said~~
~~egress flow controller indicative of said data flow restart and directing a switchover by~~
~~said egress flow controller to wherein an indication is received to start accepting said~~
25 ~~data flow from a path traversing said another~~ switching core path, and said data flows
from said path traversing said another core are accepted thereafter.

15. (Original) The method of Claim 14, wherein one or more virtual
output queues (VOQ) exist for a particular egress flow controller, switching from said
first data flow to said second redundant data flow being accomplished on a per VOQ
basis.

16. (Currently Amended) The method of Claim ~~15~~ 14, wherein monitoring
of data flows is accomplished using link test cells generated from ~~said~~ a link test cell
generator in said ingress flow controller to a link test cell receiver in said egress flow
controller.

17. (Currently Amended) The method of Claim 16, wherein said ~~indication~~
~~to switch said data flow path~~ interruption signaling is given by an end-of-flow (EOF)
test cell.

18. (Currently Amended) The method of Claim ~~17~~ 16, wherein said
~~indication to start accepting packets from said another core~~ data flow restart signaling
is given by a start-of-flow (SOF) test cell

19. (Currently Amended) The method of Claim 14, wherein said egress flow controller includes a filter table which is altered upon detection of said data flow restart signaling ~~indication to start accepting said data flow from said another switching core.~~

20. (Original) The method of Claim 14, wherein a destination address of a special test cell is directed to a specific flow controller with regard to a unicast switchover.

21. (Original) The method of Claim 14, wherein special test cells arrive at all leaves of a multicast data transmission, the test cells including a field used to select a particular flow controller address for switchover of said data flow.

22. (Original) The method of Claim 18, wherein a SOF test cell for a flow controller corresponding to an offline data flow is not scheduled until an EOF test cell has been dequeued from the flow controller corresponding to the online data flow.

23. (Original) The method of Claim 15, wherein VOQ backpressure is asserted to an ingress flow controller once a valid switchover communication is received regarding a corresponding VOQ, thereby enabling FIFOs in said ingress flow controllers to drain.

24. (Original) The method of Claim 18, wherein a flow controller for an offline data flow includes an offset counter to detect that a SOF cell is at the head of VOQ.

25. (Original) The method of Claim 14, wherein said flow controllers include a function for aggregation of various data flows.

26. (Original) The method of Claim 23, wherein said flow controllers further include an arbiter function for selection of said data flows.

27. (Original) A multiservice packet based switch apparatus capable of performing a switchover of data flows from a first data flow to a second redundant data flow without loss of data, said apparatus comprising:

at least two redundant switching cores; and

5 a plurality of arbiter and aggregator devices coupled to either side of said switching cores, wherein during said switchover an ingress arbiter device in line with data flows proceeding to at least two corresponding aggregators inserts an end of flow indication to the corresponding aggregators causing each data flow of a selected virtual output queue to stop,

10 a first aggregator indicating to a second of said aggregators when it has stopped traffic of a particular data flow, wherein said second aggregator after stopping traffic of its data flow notifies a corresponding egress arbiter of said stopping via said end of flow indication, wherein said egress arbiter switches to said second data flow thereafter.

28. (Original) The apparatus of Claim 27, wherein said egress arbiter switches to said second data flow after receiving an end of flow indication from each of said at least two aggregators.

29. (Original) The apparatus of Claim 28, wherein said end of flow indication instructs said egress arbiter regarding which of said switching cores to be switched.

30. (Original) The apparatus of Claim 27, wherein said egress arbiter receives a start of flow indication for restarting said data flows.